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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/559,832

12/06/2005

Fabrice Stassin

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EXAMINER

RIOJA, MELISSA A

ART UNIT

PAPER NUMBER

1796

MAIL DATE

DELIVERY MODE

02/02/2010

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/559,832	Applicant(s) STASSIN ET AL.	
	Examiner MELISSA RIOJA	Art Unit 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on December 7, 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 12-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 12-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on December 7, 2009 has been entered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 12 - 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 11080037 to Ishii et al. in view of US 2,761,835 to Brown. Citations for Ishii et al. are from the English-language abstract provided by Derwent, the machine translation for the reference from the Japan Patent Office, and the oral translation received by the examiner from the Science and Technical Information Center on January 8, 2010.

Regarding Claims 12 - 18. Ishii et al. teach a process of modifying an inorganic laminar compound by bringing it into contact with an "organic guest molecule" in the presence of supercritical carbon dioxide (Derwent Abstract, "Problem to Be Solved"). The compounds and carbon dioxide are kept under a pressure of in the range of 10 – 20

MPa (100 – 200 bars) and a temperature in the range of 30 - 50°C. The inorganic guest molecule is uniformly absorbed in the voids of the laminar compound (Derwent Abstract, "Solution"), i.e. it is intercalated into the inorganic laminar compound. The inorganic laminar compound is preferably montmorillonite (Derwent Abstract, "Solution").

Ishii et al. does not require a polar solvent in the claimed manufacturing method (Machine Translation: Claims 1 – 3). A polar solvent is also never expressly required by the disclosure. However, the inventive example provided uses a "little ethanol," specifically 1 mL/10 mg "organic guest molecule" (Machine Translation: Example, Paragraph 13). During the oral translation, it was indicated that Paragraph 14 in the Example section of the machine translation sets forth a comparative example. According to the oral translation, 1 ml ethanol/1 mg "organic guest molecule" is used. The amount of ethanol used in inventive example is significantly less than the amount used in the comparative example. The experimental modification, then, of this prior art in order to ascertain optimum operating conditions fails to render applicants' claims patentable in the absence of unexpected results. *In re Aller*, 220 F.2d 454, 105, 105 USPQ 233 (CCPA 1955) (MPEP 2144.05) Given the disclosure of Ishii et al., it is the Office's position that it would have been obvious to a person of ordinary skill in the art at the time of invention to optimize the amount of polar solvent used. Ishii et al. provide clear motivation for reducing and even eliminating polar solvents from the process, indicating conventional processes employing solvents require complicated operations and do not produce uniformly modified clays. In fact, Ishii et al. uses supercritical carbon dioxide to avoid the problems associated with conventional processes using solvents (Machine Translation: "Detailed Description," Paragraphs 2 and 5). A prima facie case of obviousness may be rebutted, however, where the results of the optimizing

variable, which is known to be result-effective, are unexpectedly good. *In re Boesch and Slaney*, 617 F.2d 272, 205, 205 USPQ 215 (CCPA 1980) (MPEP 2144.05)

Ishii et al. does not expressly teach the organic guest molecule/intercalating agent to be one of the claimed compounds. However, Brown also teaches a method of intercalating/modifying montmorillonite with substituted ammonium ions from a salt such as tetraethylammonium chloride (Column 2, Lines 33 –38; Column 3, Lines 58 – 61; Column 4, Lines 20 – 21, 35 – 36, and 52 - 53). As Brown teaches the specifically claimed organomodifier, it is presumed that this organomodifier will be insoluble in supercritical carbon dioxide as set forth in instant Claim 12. Ishii et al. and Brown are analogous art as they are from the same field of endeavor, namely processes for modifying montmorillonite and other similar compounds. At the time of invention, it would have been obvious to a person of ordinary skill in the art to use tetraethylammonium chloride as the organomodifier in the process taught by Ishii et al. The motivation would have been that tetraethylammonium chloride provides advantages such as improved mechanical strength and increased resistance to chemical attack to the clays it modifies (Brown: Column 3, Lines 58 – 62).

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP 11080037 to Ishii et al. in view of US 2,761,835 to Brown, as applied to Claim 12 above, and further in view of US 5,654,347 to Khemani et al.

Regarding Claim 19. Ishii et al. teach the process of Claim 12 but do not expressly teach the modified clay produced is incorporated into a polyester foam with a regular, fine, and closed cell structure. However, Khemani et al. teach a polyester foam whose properties may be modified with the addition of clay (Column 4, Lines 30 – 33). Polyesters contain potentially hydrolysable ester bonds that give them biodegradability.

The final polyester foam product has a well formed cell structure where all cells are closed cells with a diameter between 200 – 400 μm (Column 7, Line 60 – Column 8, Line 3). Ishii et al. and Khemani et al. are analogous art as they are from the same field of endeavor, namely compositions containing clay. At the time of invention, it would have been obvious to a person of ordinary skill in the art to incorporate the modified clay taught by Ishii et al. into a polyester foam with the cell structure taught by Khemani et al. The motivation would have been that the incorporation of clay into foam would enhance the properties, such as thermal stability and mechanical strength, in the final foam product and that modified clay has enhanced miscibility with polymers compared to unmodified clays.

Response to Arguments

Applicant's arguments filed December 7, 2009 have been fully considered but they are not persuasive because:

Applicant argues that the limitation regarding the insolubility of the organomodifier in supercritical carbon dioxide has not been properly addressed. However, as indicated in the rejection of Claims 12 – 18, Brown teaches one of the specifically claimed organomodifiers set forth in Claim 14, tetraethylammonium chloride. Claim 12, on which Claim 14 depends, sets forth the organomodifier used is insoluble in supercritical carbon dioxide. Consequently, though not expressly taught by Brown, it is presumed that tetraethylammonium chloride is inherently insoluble in supercritical carbon dioxide as is implied by the instant claims.

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MELISSA RIOJA whose telephone number is (571)270-3305. The examiner can normally be reached on Monday - Friday 7:00AM - 3:30PM E.S.T..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Eashoo can be reached on (571)272-1197. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mark Eashoo/
Supervisory Patent Examiner, Art Unit 1796

/MAR/
January 7, 2009